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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XIX November 1, 1935 Number 18

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Weather relations are discussed in the notes on potato late blight and bacterial wilt of sweet corn.

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BACTERIAL WILT OF CORN IN NASSAU COUNTY, LONG ISLAND, NEW YORK IN 1935

M. C. Richards

The winter temperature index (P.D.R. 18:141,1934) for Nassau County for 1935 was 83.3, nevertheless in the southern and central portions of the county an unusually severe outbreak of bacterial wilt (Aplanobacter stewarti) occurred. Twenty wilt-resistant hybrids were planted in the wilt-infested area. The early maturing hybrids such as Spanish Gold Cross showed as high as 82 per cent wilt infection and the later maturing hybrids such as Golden Cross Bantam, from five different seed sources, showed from 17 to 65 per cent wilt infection. In commercial plantings of Golden Cross Bantam as high as 30 per cent of the plants were wilted. In a few fields of early non-hybrids over 90 per cent of the plants were killed. Chaetocnema pulicaria was found throughout the season in the area where wilt was serious.

In the northern and southwestern sections of the county very little wilt was found, 3 per cent only in the commercial plantings.

Dr. H. S. Cunningham reported little or no wilt for the eastern end of Long Island.

Dr. Chupp wishes to add to the New York report that in some of the up-State counties, as far north as Tompkins County, wilt occurred only on the extra early varieties from seed infection, and the wilt organism from this source did not spread to other corn varieties. (Oct. 21)

INCIDENCE OF BACTERIAL WILT OF CORN IN THE EASTERN UNITED STATES IN 1935

N. E. Stevens

A satisfactory field survey for the occurrence of bacterial wilt of corn is becoming increasingly difficult. The continued popularity of the hybrid sweet corns, some of which suffer very little from the disease under field conditions, frequently makes it a real problem to find adequate amounts of early susceptible varieties. Moreover, as growers become accustomed to the disease, they are less likely to report it to county agents or State pathologists. In order to make as accurate as possible a comparison with previous years, the

writer undertook in July, 1935, a careful field survey of certain sweet corn growing areas in the northeastern United States, devoting special attention to the interesting "border" localities where the disease was abundant in 1932 and 1933, but much less so in 1934. In many cases the same regions, even the same farms, were surveyed which were visited in 1932, 1933, and 1934. As always, the State pathologists and county agents were generous with their time and assistance.

MAINE: No cases of natural infection were found in the course of a rather hasty survey in York and Cumberland Counties, but the inoculations made by Miss Florence Markin at Highmore Farm, Monmouth, Maine, appeared to be developing normally.

NEW HAMPSHIRE: No disease found, though the area in which the disease was found in 1933 was carefully resurveyed.

MASSACHUSETTS: Conditions in the Connecticut River Valley have already been reported by Boyd (P.D.R. 19: 204). The only additional information that can be recorded here is the finding of a few badly diseased plants in Falmouth, Barnstable County.

RHODE ISLAND: Occasional badly diseased plants were found in a field near Warwick.

CONNECTICUT: According to Clinton and Dunlap, and the observations of the writer, bacterial wilt was even less common than last year. The difference can hardly be expressed mathematically, because the infection was very light both years.

NEW YORK: The very interesting condition on Long Island has been reported by Richards. In Rockland County bacterial wilt was found in a few fields of susceptible varieties, though in very small amounts; usually the count was as low as 1/3 of 1 per cent infected plants. In Ulster County, no case of the disease was discovered, although it must be admitted that the survey was decidedly hampered by floods which submerged some of the fields visited in earlier years and injured the corn.

NEW JERSEY: A very favorable basis of comparison is furnished by Haenseler's experimental plantings at New Brunswick. Infection was nearly the same in amount as last year. Haenseler estimated 20 per cent total infection on susceptible varieties July 2.

PENNSYLVANIA: Infection was very severe on susceptible varieties of sweet corn in the southwestern part of the State, in Alleghany and Westmoreland Counties. On susceptible varieties in gardens, 80 per cent total infection and 10 per cent dead plants were observed July 21.

VIRGINIA: See Wingard's report of July 25 (P.D.R. 19: 204) to which might be added the observation that as in all recent years, infection was very severe at Arlington Farm.

In general then, it is evident that in 1935 bacterial wilt was of commercial importance on susceptible varieties in and south of southern Pennsylvania and central New Jersey, and in the southern portion of Nassau County, Long Island. It was present but by no means of commercial importance in the southern Hudson Valley of New York and in the warmer portions of Connecticut and Massachusetts. North of this region it could not be found even after careful survey.

Experimental Forecast

Comparison of the conditions revealed by this survey with the experimental forecast issued in the Reporter (P.D.R. 19: 69) show clearly both the substantial agreement of the forecast with the general conditions, as observed in the field several months later, and the danger of attempting to apply so crude a measurement too specifically to a particular locality. The forecast for 1935 was based on winter temperatures at representative stations and was as follows: "On the whole any considerable increase in the amount of disease over last year (1934) is unlikely."

In general, the conditions revealed by the field survey agreed with this prediction. The severity of the disease in southern Nassau County, (Long Island) New York, where the winter temperature index, taken at Mitchel Field, Garden City, was 88, constitutes an exception to the working hypothesis suggested a year ago (P.D.R. 18: 143) "that this disease will usually be absent in the northeastern United States following a winter with an index below 90 and present in destructive amounts following a winter with an index above 100." It is evident that this region, the very one in which Stewart discovered the disease in 1894, will repay careful further studies. (Division of Cereal Crops and Diseases)

OCCURRENCE OF WHEAT MOSAIC IN INDIANA AND ILLINOIS IN 1935

H. H. McKinney

During 1935 wheat mosaic was identified for the first time in Huntington County, Indiana; Tazewell, Piatt, Vermillion, Edgar, and Clark Counties, Illinois. In some of the fields the crop was practically a failure. The rosette symptoms as well as the mottling symptoms appeared in some of the fields.

Harvest Queen, Purkof, Illinois Progeny No. 2, Winter Fife, Turkey, Michigan Amber, Fultz, and a variety known locally as Perfection manifested the greatest injury. A field of Fulcaster showed mosaic in about 40 per cent of the plants, but as in previous tests and field observations the disease was mild and seemed to induce no appreciable crop loss in this variety. Fulhio has shown a high degree of resistance and has been chosen as the most promising wheat for the infested areas in Illinois because of its desirable agronomic qualities.

Resistant selections from Harvest Queen, Nittany, and Illini Chief varieties still maintain a high degree of resistance to mosaic mottling and apparent immunity from the rosette symptoms. These and other selections are being used in cooperative breeding tests in Indiana and Illinois. (Division of Cereal Crops and Diseases; Oct.17)

LATE BLIGHT OF POTATOES IN NEW YORK STATE IN 1935

Charles Chupp

The late-blight (Phytophthora infestans) situation in New York State is interesting if the map showing the rainfall in July, figure 55, is compared with the map showing the severity of tuber rot in the various sections, figure 56. Those counties or parts of counties that had less rainfall than two inches above normal for the month had little or no blight. The rot increased as the rainfall increased, so that in parts of the Cortland Valley where there was an excess of almost twelve inches of rain many unsprayed fields were reported to have 40 to 60 per cent of their tubers rotted. On the other hand, Saratoga County had almost as much rain, but much less rot. The sandy soils in this case may have protected the tubers, or the night temperatures may have been too high for infection.

The entire loss by tuber rot was approximately one million bushels, figured on a total present yield of 23,000,000 bushels for the State. A further loss of about 150,000 bushels was caused by blighting of the tops before the crop was mature. The reason for the comparatively small loss in the State after blight had begun to show so generally early in the season, was the fact that some of the most intensive potato counties, as Suffolk, Nassau, Erie, Genesee, Monroe, Franklin, and Clinton, had a normal or below normal rainfall, and almost no tuber rot.

Fortunately, August was a dry month, with subnormal rainfall in nearly every section of the State. The only stations reporting more than average rainfall for the month were Andover, Elmira, Sherburne, Dannemora, Brockport, Lockport, Avon, and Hemlock. It

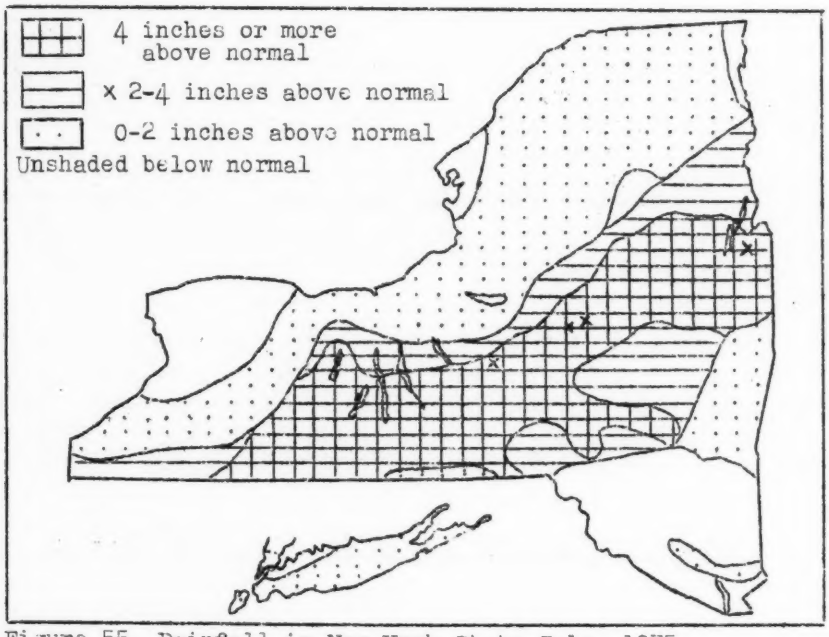

Figure 55. Rainfall in New York State, July, 1935

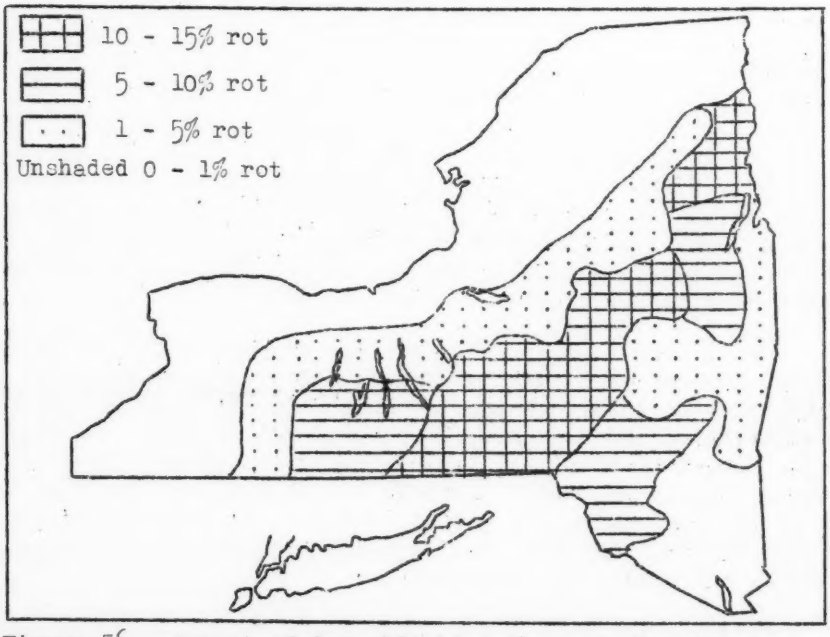

Figure 56. Amount of late blight tuber rot of potatoes in New York, 1935.

is interesting to note in this connection that the only areas where the blight rot was more prevalent than the July rain might predicate, were parts of Allegany, Livingston, and Chemung Counties. This shows what might have happened to the potato crop if August had had more than the average rainfall.

There is another reason why the lack of rain in August was a help to the potato growers. In that month the number of nights during which the temperature was low enough for spore germination of the blight fungus was double that representing the cool nights of July. For this reason there could have been a greatly increased number of infections taking place if moisture had been present. (Oct. 24)

CURLY-TOP IN IDAHO IN 1935

C. W. Hungerford and W. H. Pierce

The curly top disease was unusually severe in the Twin Falls section on beans. A relatively late migration of the beet leafhopper (Eutettix tenellus) was responsible for the severe injury to that crop. The Red Kidney, Bountiful, Giant Stringless, and some wax podded varieties were most seriously affected. Burpees Green Pod, Full Measure, and Great Northern appeared to be less susceptible and Red Mexican and Burtner's Blight Proof were resistant. The average loss from curly top on the garden varieties was estimated at 50 per cent.

Tomato plantings throughout the southern part of the State were found to be generally affected with curly top. Losses in individual plantings were as high as 100 per cent. The estimated average loss for the State was 30 to 40 per cent. Certain sections of the State are subject to losses from curly top every year. The Lewiston section, Boise Valley, and the western portion of the Twin Falls section nearly always experience appreciable losses from curly top.

Climatic conditions, soil and other factors in certain sections of Idaho are very favorable for the production of high yields and fine quality of certain vegetable and flower seeds. Growers and seedmen in the Boise Valley suffered serious loss this year from curly top on cucumbers and on Zinnias. These crops were a total loss in some cases. (Oct. 16)

PEA DISEASES IN IDAHO IN 1935

C. W. Hungerford and W. H. Pierce

Root rot (Fusarium solani martii f.2), which was very prevalent and severe in the Upper Snake River Valley in 1934, was found to be causing a comparatively small amount of damage in 1935. More adequate irrigation water no doubt tended to decrease the damage from this disease.

Wilt (Fusarium orthoceras pisi) was less prevalent than in 1934 due, probably, to the more general use of wilt-resistant varieties.

Near-Wilt (Fusarium oxysporum f.8) was noted in the St. Anthony section although less generally than in 1934.

Mosaic (virus) was not found prevalent in the Upper Snake River Valley nor in the Palouse area. Severe infections of mosaic, however, were found in the McCall-Cascade green pod pea area on the Alderman, Dwarf Alderman, and Laxton's Progress varieties. Infections varied from slight in some fields to as high as 75 per cent in others. The most severe infections were found to border red clover or alsike fields, or were bordered by ditches or fence rows harboring these clovers. A rather high percentage of the clover plants were found to be affected with mosaic. Greenhouse tests have shown that the mosaic occurring on the peas in this section was caused by the same virus as that causing the mosaic on red clover. It seems probable that red clover is an important overwintering host of the pea mosaic virus common in the Cascade-McCall area.

Tests of other legumes affected with mosaic has indicated that alfalfa and sweet clover are not important in the overwintering of the type of pea mosaic commonly found in Idaho. It is recognized, however, that other types of pea mosaic occur. A type which produces leaf and stipule enations has been found occasionally in Idaho and is known to occur in California. Another type sometimes found in Idaho is a pea mosaic caused by the same virus as the virus of yellow bean mosaic (bean virus 2) Neither of the latter two types appear to be of importance economically in Idaho at the present time. (Oct. 16)

STEM GALL ON SNOWBALL

Nellie A. Brown

A gall on the stems of Viburnum opulus hitherto not reported from the District of Columbia was found in that location in 1935. It proved to be the same disease that occurs in New York State

reported by the writer in Phytopathology, October, 1934. It is a fungus gall produced by a species of Phomopsis. The galls occur on the stems mostly at the nodes and vary in size from less than one-fourth inch to over an inch in diameter. Besides making this ornamental shrub unsightly, they eventually kill the stems.

Phomopsis was isolated from the District of Columbia galls and the disease reproduced on Viburnum opulus by inoculations with pure cultures of the fungus. (Division of Fruit and Vegetable Crops and Diseases).

DUTCH ELM DISEASE ERADICATION

(From Bureau of Entomology and Plant Quarantine, reports for weeks ending Oct. 12 and Oct. 19)

During the period Dutch elm disease was confirmed in a second tree at Brunswick, Maryland. Two infected slippery elms (Ulmus fulva) were found in Westchester County, New York.

The number of trees confirmed and eradicated during the period is as follows:

	Confirmed	Removed
Connecticut		
October 6 to October 19	1	1
Total up to October 19	132	132
New Jersey		
October 6 to October 19	74	382
Total up to October 19	9,001	8,958
New York		
October 6 to October 19	10	42
Total up to October 19	4,747	4,744
Other		
October 6 to October 19	1	1
Total up to October 19	34	34
Total		
October 6 to October 19	86	426
Total up to October 19	13,914	13,868